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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,499

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Yoshihiro Tanaka

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EXAMINER

HERRING, BRENT W

ART UNIT

PAPER NUMBER

3633

MAIL DATE

DELIVERY MODE

09/08/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/588,499	<b>Applicant(s)</b> TANAKA, YOSHIHIRO	
	<b>Examiner</b> BRENT W. HERRING	<b>Art Unit</b> 3633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15-26 is/are pending in the application.
- 4a) Of the above claim(s) 8,9,16,18 and 19 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-13 and 15 is/are allowed.
- 6) ☒ Claim(s) 1-7,10,17 and 20-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/5/2009 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Ishibashi et al., JP 2003-113673.

Regarding claim 10:

'673 discloses a shearing force reinforced structure comprising: an existing reinforced concrete structure object (9, see Fig. 3);

a first shearing force reinforced member (13) arranged inside a first reinforced member insertion hole and a second shearing force reinforced

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member arranged inside a second reinforced member insertion hole (2, 12, see Fig. 1) formed in the reinforced concrete structure object; and

a filler (6) filled in the first reinforced member insertion hole and the second reinforced member insertion hole,

wherein the first shearing force reinforced member comprises a first wire rod (13) as measured at a point along its length having the maximum diameter, and a first base end fixation member (the protruding band on the base end of the rod, see Fig. 3) formed at a base end of the first wire rod as measured at a point along its length having the maximum diameter and having a width larger than a diameter of the first wire rod (see Fig. 3).

4. Claims 1, 3, 4, 20, 21 and 25 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Osaka, JP7238690.

Regarding claim 1:

'690 discloses a shearing force reinforced structure comprising:

an existing reinforced concrete structure object (a, see Fig. 5) having an inner face side and an outer face side;

a shearing force reinforced member (c, see Fig. 1) mainly made of a solid wire rod, the solid wire rod being arranged between the inner face side and the outer face side inside a reinforced member insertion hole formed in the existing reinforced concrete structure object (see Fig. 8) between the inner face side and the outer face side; and

a filler (18) filled in the reinforced member insertion hole,  
wherein the reinforced member insertion hole comprises a general part having an inner diameter larger than a diameter of the wire rod (see Fig. 8), and a base end width broadening part (13) formed at a base end of the reinforced member insertion hole and having an inner diameter larger than the general part.

**NOTE that the reinforced member insertion hole is partially within the reinforced concrete structure object and partially in the mortar layer.**

Note that the wire rod of '690 is inherently solid.

Should applicant argue that '690 does not expressly disclose wherein the wire rod is solid, examiner takes official notice that is old and well known to persons of ordinary skill in the art to make wire rod connectors solid.

The motivations to have a solid wire rod include cost savings, durability and reliability.

Regarding claim 3:

'690 discloses wherein the shearing force reinforced member comprises a shearing force reinforcing bar of the wire rod; and a base end fixation member that is formed at a base end of the shearing force reinforcing bar and of which a section shape is larger than a reinforcing bar diameter of the shearing force reinforced reinforcing bar.

Regarding claim 4:

'690 discloses claim 3, wherein at a top end of the shearing force reinforcing bar is formed a top end fixation member of which a section shape is

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larger than a reinforcing bar diameter of the shearing force reinforced reinforcing bar.

Regarding claim 20:

'690 discloses a shearing force reinforced member (see Fig. 9) arranged inside a reinforced member insertion hole formed in an existing reinforced concrete structure (A) object having an inner face side (left side, see Fig. 8) and an outer face side (side to left of gap s) of said reinforced concrete structure, the member comprising:

a solid wire rod (c) having a length shorter than a total length of the reinforced member insertion hole (see Fig. 9) and arranged within the reinforced member insertion hole between the inner face side and the outer face side (see fig. 8); and

a base end fixation member (9) and a top end fixation member (8) respectively having width sizes larger than a diameter of the wire rod (see Fig. 1) and respectively fixed at a base end and top end of the wire rod.

Should applicant arguer that '690 does not expressly disclose wherein the wire rod is solid, examiner takes official notice that is old and well known to persons of ordinary skill in the art to make wire rod connectors solid.

The motivations to have a solid wire rod include cost savings, durability and reliability.

Regarding claim 21:

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'690 discloses claim 20, wherein a width size of the top end fixation member is formed to be 120% to 250% of a diameter of the wire rod (see Fig. 1, by visual inspection).

Regarding claim 25:

'690 discloses claim 20, wherein in the base end fixation member, at a base end of the wire rod is fixed a steel plate of which a shape is a circle (see Fig. 2), a thickness size is 30% to 120% of a diameter of the wire rod (by visual inspection of Fig. 1), and a width size is 130% to 300% of a diameter of the wire rod (also by visual inspection of Fig. 1).

5. Claims 2, 5, 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osaka ('690) in view of Tuska, US 3,599,379.

Regarding claim 2:

'690 discloses claim 1, but does not expressly disclose wherein there is a top end width broadening part having an inner diameter larger than the general part (12) formed at a top end of the reinforced member insertion hole.

'379 discloses a shearing force reinforced structure (see Fig. 6) wherein there is a top end (see fill section 73) of the reinforced member insertion hole (73) having an inner diameter larger than the general part (see Fig. 6).

'690 and '379 are analogous art because they are from the same field of concrete structures with hollow sections holding anchoring members and surrounded by fill material.

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At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the wider top end of the hole as taught by '379 in the structure of '690.

The motivation to combine would have been to create a tight lock between the fill material and the outer concrete section (col. 4, lns. 70-75 of '379).

Regarding claim 5:

'690 in view of '379 discloses claim 1, but does not expressly disclose wherein an adhesion strength of the filler is not less than  $60 \text{ N/mm}^2$  in a case that the wire rod is a deformed reinforcing bar.

In the instant case, the prior art applies epoxy resin (18) as the filler to inhibit separation of the concrete (a) and the wire rod (c).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to contrive any number of desirable ranges for the adhesion strength limitation disclosed by Applicant, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Further, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

The motivation to provide a minimum value for the adhesion strength would be to anticipate maximum forces imposed upon the joint.

Regarding claims 22-24:



'690 discloses claim 20 wherein the wire rod is configured with a thread reinforcing bar (see Fig. 1), but '690 does not expressly disclose wherein at a top end of the wire rod a male thread member is processed and integrally formed, and wherein the top end fixation member is configured with a steel plate of which a shape is a circle or a polygon, a thickness size is 80% to 120% of a diameter of the wire rod, and a width size is 200% to 300% of the diameter of the wire rod; a female thread is formed in the steel plate; and by screwing the male thread member of the wire rod into the female thread, the top end fixation member is fixed at the top end of the wire rod.

'379 discloses a shearing force reinforcing member, wherein a top end of the wire rod is a male thread member (see Fig. 6) integrally formed and processed, and wherein a top end fixation member (70, see Fig. 6) is configured with a steel plate of which a shape is a polygon, a thickness size is 80% to 120% of a diameter of the wire rod (by visual inspection of Fig. 6), and a width size is 200% to 300% of the diameter of the wire rod; a female thread is formed in the steel plate (for threaded engagement with the wire rod, 67); and by screwing the male thread member of the wire rod into the female thread, the top end fixation member is fixed at the top end of the wire rod (see Fig. 6).

'690 and '379 are analogous art because they are from the same field of wire rods inserted in concrete bases to resist external forces.

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At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the top end fixation structure of '379 for the end fixation structure of '690.

The motivation to combine would have been to provide for a removable top end that once removed, provides for a joint to form an anchor.

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osaka ('690) in view of Rossi, US 6,860,935.

Regarding claims 6 and 7:

'690 discloses claim 1, but does not expressly disclose using a fiber reinforced cement as the filler and the process and composition in forming the fiber reinforced cementitious composite material.

'935 discloses a cementitious composite material comprised of a fiber/cement composite, a pozzolan reaction particle, and a plasticizer, and water (see abstract).

'690 and '935 are analogous art because they relate to the field of cementitious mixtures exposed to forces.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the composition of '935 as the filler in '690.

The motivation to combine would have been to provide for added strength and reinforcement.

The motivation to substitute would have been to strengthen the composite mixture in order to sustain a higher shear force load.

Neither '690 nor '935 disclose the exact dimensions and quantities of the components disclosed in claim 7.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to contrive any number of desirable ranges for the fiber diameters, volume ratios, cement aggregate, and the pozzolan particle limitations disclosed by Applicant, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Further, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

In the instant case, the motivation to determine the optimum range would have been to provide adequate strength for the forces experienced by the concrete.

Furthermore, note that the determination of patentability in a product-by-process claim is based on the product itself, even though the claim may be limited and defined by the process. That is, the product in such a claim is unpatentable if it is the same as or obvious from the product of the prior art, even if the prior product was made by a different process.

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7. Claims 17 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al., JP 2003-113673 in view of Andraet et al., US 5,867,960.

Regarding claims 17 and 26:

'673 discloses claim 10, but does not expressly disclose wherein the first base end fixation member, at a base end of the first wire rod is fixed a plate member configured with a width not less than 5 times/10 times and not more than 20 times/15 times a diameter of the first wire rod.

'960 discloses a shearing reinforced structure wherein a first base end fixation member (8, see Fig. 1) has a plate member fixed at a base end of the first wire rod.

'960 and '673 are analogous art because they are from the same field of shearing force reinforcing members in concrete.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the plate member of '960 on the member of '673.

The motivation to combine would have been to create force truss joints in the members (col. 4, Ins. 3-10 of '960).

'673 in view of '960 does not expressly disclose the range of the diameter of the plate member in relation to the diameter of a corresponding wire rod.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to contrive any number of desirable ranges for the plate width in relation to the wire rod diameter limitation disclosed by Applicant, since it has been held that where the general conditions of a claim are disclosed

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in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. Further, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

The motivation to provide a specific ratio would have been to provide the optimal force truss joint while preventing catastrophic failure from excessive forces.

***Allowable Subject Matter***

8. Claims 11-13 and 15 are allowed.

***Response to Arguments***

9. Applicant's arguments filed 8/5/09 have been fully considered but they are not persuasive.

10. Regarding applicant's argument that '690 does not expressly disclose a solid wire rod, note that it known to persons of ordinary skill in the art to fashion reinforcement wires to be solid. It is easier to manufacture solid wire rods than hollow wire rods.

11. Regarding applicant's argument that '690 does not have an insertion hole formed between the inner face and the outer face of the existing reinforced structure, note that the hole IS located between said faces in the prior art of '690.

12. Regarding applicant's argument that '673 does not have a first base end fixation member and a top end fixation member with width larger than a diameter of the rod,

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refer to Fig. 3 of '673 and note that the rings have a larger diameter than the rod over which they are attached.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRENT W. HERRING whose telephone number is (571)270-3661. The examiner can normally be reached on Monday-Thursday, 8:00AM-5:30PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard E. Chilcot can be reached on (571)272-6777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. W. H./

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Examiner, Art Unit 3633

/Robert J Canfield/

Supervisory Patent Examiner, Art Unit 3635